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CONVALESCENCE AND ITS STAGES, AND SOME OF THE PHYSICAL AIDS AVAILABLE FOR THEM. (a)

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THE greater or less rapidity of our cures is of some importance to all classes of patients, and not least to the breadwinners who are to be found in hospitals. For them it is vital not to be long detained from home and from work, though not less important not to be discharged in a state of unfinished recovery, or of imperfect convalescence. As a fact, there is seldom any stint, but sometimes an excess of liberality in the time allowance; and this reminds us that the precept "*Cito, tuto, et jucunde*," should be applicable, not only to treating, but to convalescing our patients rapidly. The time question touches the economical interests of the charity and the health interests of the community. How to shorten the period of treatment is not before us to-day; but it may be worth considering whether a saving of the patients' time, and of the hospital "beds" might not be effected by additional attention to the management of convalescence. As the majority of convalescents are of the medical description, my remarks will apply largely, but by no means exclusively, to them.

A *liberal diet* is a first essential; and I need not dwell upon the obvious principle that true economy consists in "feeding up" our patients, if possible, during their illness, but at any rate during their convalescence. *The suitable medicinal management* of the cases is another subject not under our present consideration. It is to the *physical hygiene of convalescence* that I would turn your attention, with special regard to the mechanical assistance which can be provided for hospital patients, as well as for private patients, for the more rapid restoration of their muscular energy and tissue.

The stages of convalescence may be conveniently described as:—(1) The Bed Stage; (2) the Out-of-Bed Stage; and (3) the Out-of-Door Stage.

(a) From Notes of a Clinical Demonstration at the Post-Graduate College and Polyclinic, October 20th, 1907.

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The third stage is that which eventually takes private patients away to distant climates for recuperation; and our hospital patients away to convalescent homes. I believe that it might sometimes be much less delayed if both previous stages could be more actively managed, and somewhat shortened.

I am of impression that an over anxiety for our patients is apt now and then to prolong the bed stage. Doubtless the management of wards is in a measure simplified by keeping some of the patients quietly in bed. And it cannot be gainsaid that, so long as a liberal diet is supplied, the principal purpose is being served, along lines of absolute safety. At the same time the main indication in convalescence is *the recovery of the tissues and of the functions by their graduated use*. Any unnecessary delay in this systematic re-education is wasteful, for unless we can exercise our bedridden convalescents in their beds it must be slow work for the muscular system and for the heart to regain weight and power in the absence of the natural stimulus of movement.

In surgical practice, it is now a recognised common-sense principle "to rest and protect the damaged part or limb, but to set the body free." In most medical cases we have to deal with two similar indications, which are not incompatible if we know how to combine them, viz.: (1) the improvement of the general and of the cardiac nutrition; and (2) the improvement of the local health and strength of the suffering or impaired peripheral mechanisms. Practical care devoted to these objects will be amply rewarded in the results.

The Bed Stage.

As regards the management of the convalescent during the resting period, time will not permit me to enter again into the details of the method which I have described to you on previous occasions. To build up the strength and to grow the tissues, there are two requisites: food and oxygen. We have all been taught as students to supply food; but not all of us sufficiently taught to supply the oxygen.

The earliest, the most indispensable, and the most profitable exercise for our bedridden convalescents is *the systematic exercise of the respiratory function*, which feeds and exercises the heart through its own perpetual stimulus, the work of the respiratory muscles. On the other hand, by improving the blood and the circulation, it improves the nutrition of bone, cartilage, muscles, and joints, and of all the organs. *Massage and resistance movements* are the next instalment to be provided for the patient whilst he is still confined to his bed. With these helps it is often possible to



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materially reduce the period of recumbency. Having secured this solid basis of respiratory and circulatory efficiency, the patient can soon be lifted out of bed without any fear of overstrain for heart, lungs, or limbs.

*The Out-of-Bed Stage,
and the "Convalescent Machine."*

At this stage I have found considerable advantage from the use of a versatile commodity, for which I

FIG. 1.



The Convalescent Machine as a Wheeled Chair.

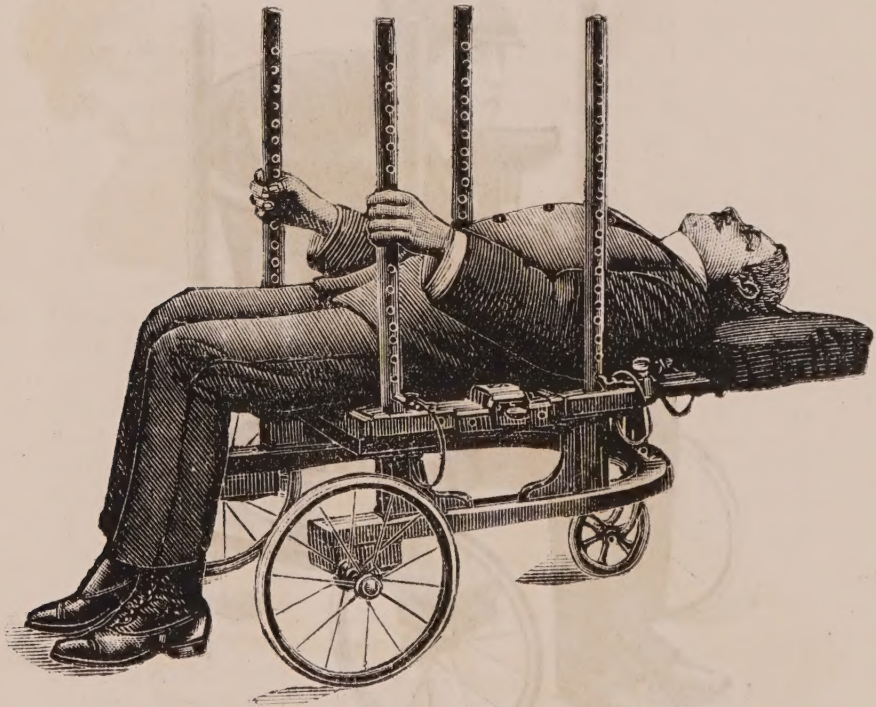
know no better name than that of the *Convalescent Machine*. Its construction was first suggested to me by a desire to secure for the adult the special advantages obtainable in infants and children with the "Baby Rest" and the "All Fours' Exerciser." No description has hitherto been published of these useful additions to the furniture of the nursery. But you may remember my having shown them to you at the Polyclinic; and I have also written an incidental reference elsewhere. (a)

The purposes secured in these two appliances are:
(1) Efficient *rest* with *varied posture*, and, when de-

sired, with locomotion; and (2) *complete freedom* of the four extremities and of the head for every variety of movement, combined with complete support of the body, so that none of its weight is allowed to be borne by the limbs. In this respect they might be likened to a sort of "swimming board," (a)

The general plan of the machine, best seen in Fig. 4, is that of a strong wooden, U-shaped, movable *upper frame*, capable of an extensive variety of horizontal positions by altering the place of the iron pins in the

FIG. 2.



The Convalescent Machine as a Supine Couch, or Supine Exerciser.

holes of the vertical wooden poles. These are firmly fixed in a lower U-shaped frame also made of wood, to which the wheels are attached.

The upper frame is padded in front for the tender hands of gout, of rheumatism, or of paralysis. It is furnished at the sides with crutches capable of sliding up and down for the finer adjustment of their height. By taking out the pins they can be readily lifted out when not required.

The other parts of the machine are equally easy to handle. They consist: (1) of a removable padded

(a) Cf. Reports of the Society for the Study of Disease in Children, Vol. vii. P. 201. 1906-1907.

seat, which simply lifts in and out of the upper frame; (2) of the head and shoulder support, which can be readily fitted as an horizontal extension to the front of the upper frame; and (3) of two metal rods (not shown in the illustrations) which slide out under the upper frame to support the legs and feet on a canvas-stretcher when the machine has to be used as a complete couch.

FIG. 3.



The Convalescent Machine as a Prone Exerciser, or (when lowered as in Fig. 2 and fitted with a Leg-rest) as a Prone Couch.

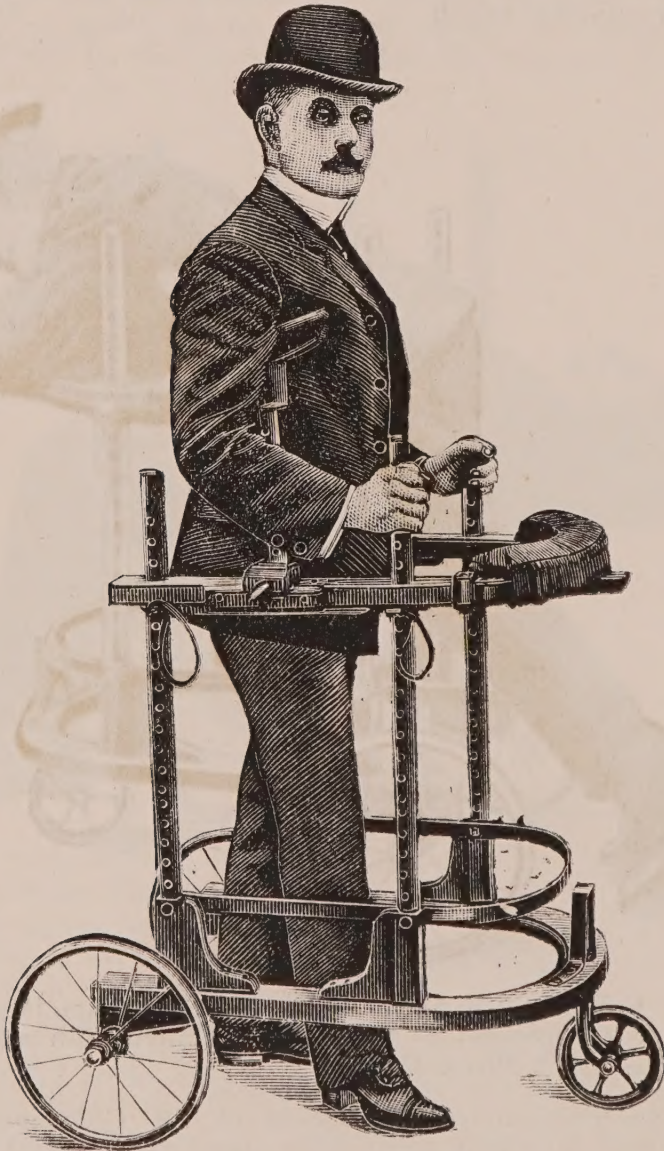
This preliminary description of the Convalescent Machine will help us to understand its varied uses, some of which are illustrated in the figures.

As a *Wheeled Couch*, the machine cannot pretend to compete in all points with the most perfect modern pattern of couch. Nevertheless, it presents advantages besides that of mere compactness, and of its adaptability to most ages and sizes. The poles, though rather

unsightly, are of practical service for leverage in all cases where the hands and arms can be used. And there is the other great advantage that the reclining convalescent can wheel the couch about for himself.

As a *Wheeled Chair*, the purpose of rest is fulfilled

FIG. 4.



The Convalescent Machine as a Walking Machine, or "Crutches on Wheels."

by arranging the head and shoulder support, as shown in Fig. 1, to serve as the back of a chair, and by lowering the crutches to a position of comfort for the

support of the elbows. But special indications can also be carried out in connection with the lower limbs, with the spine, and with the shoulder-joint.

(1) The canvas-stretcher or leg-rest is available in all cases where elevation of the lower limbs is required. (2) The crutches can be used with due reservations to encourage a correct attitude of the spine during the period of sitting. And (3) with suitable adjustment of height and of padding they can be used for passive stretching of the axilla in cases of contraction.

Exercise is the soul of convalescence, though rest is the indispensable basis, and its fundamental principle is *graduation of exertion*. This is taught us by the object lessons of Nature, when the immobility of prostrating disease gives way to the slighter movements in bed, such as turning, leaning up, and finally sitting up spontaneously. There, however, with adult convalescents the progression often stops; and unless given special opportunities many of their muscles remain unexercised. In children, putting aside special cases of disablement, Nature is not to be thwarted; and if they are confined to bed beyond the preliminary stage their muscular activities soon develop into acrobatics. It is only fair to say that "bed" is often the most convenient gymnasium we can offer them. But as any wheeled chariot has enduring fascinations for the young, a good deal of time might usefully be disposed of "on wheels."

So much for the special case of juveniles. The ordinary convalescent, if afforded a fair opportunity, will, like any infant placed on the "Baby Rest," find out for himself, or, rather, fall unconsciously into, the performance of those muscular movements of which he is capable without any stress or strain. It is obvious then that the earliest exercising function of the Convalescent Machine is that which it provides in the three positions of rest, the prone, the supine, and the seated. But the graduation of conscious and systematic exercise is the purpose for which it is specially adapted. With the "All-Fours' Exerciser" it shares the principle of "lifting off" the weight of the body, and of exercising the muscles in the "unloaded state." But it affords an additional advantage in the *weight-and-pulley attachment*, which can be fixed at the top of the poles, to exercise the limbs in the supine position on the plan of the *resisted movements*.

The application of these principles enables us to fulfil the two indications we had in view: the systemic or nutritional indication, that of improving the circulation and all the functions by movement; and the

special or local indication, which aims at restoring strength and mobility to muscles and joints.

As a *Wheeled Prone Exerciser*, the illustration, Fig. 3, demonstrates the method of progressive re-education of disused mechanisms. The weight of the trunk rests entirely upon the machine, and the level of its support is so adjusted as to allow only a tip-toe touch of exertion for the muscles and joints of the lower limbs.

When used as a *Walking Machine* the same progressive principle is provided by the apparatus; and the adjustability of the crutches is found on trial to be most satisfactory.

Muscular exercise for the limbs and joints is by no means the only line of employment for the machine. *The treatment of the viscera* is one of its chief uses, as subsequent communications will show. Of all the positions the most valuable is the *prone position*, both for the abdomen and for the chest. And of all pulmonary diseases, those which will benefit most are bronchiectasis and the chronic catarrhal affections. By raising the posterior level of the supporting cushions higher than the anterior it is possible to obtain a declivity of the thorax in the prone attitude, that is to say, the ideal posture for the spontaneous drainage of the bronchial tree, of the larger bronchi, and of the trachea.

Rest, which is the chief requisite at all stages of convalescence, is not always easy to enforce; and we must be prepared to deal not only with the normal restlessness of youth, but also with the *constitutional nervous restlessness* of some individuals. For both these classes the Convalescent Machine can lend us welcome help. It is possible to prescribe its employment for stated periods in the day either as a couch to rest the entire body, or as an armchair which combines with the repose some slight work for the loins.

The foregoing remarks have referred mainly to medical ailments and their convalescence. It is obvious, however, that facilities offered by the Convalescent Machine must prove of special service in the large group of *crippling and paralysing affections and lesions*, whether medical or surgical. It is unnecessary to enter into the details of their treatment, which would carry us too far; and it remains for me only to offer to Mr. John Ward, of 246, Tottenham Court Road, the thanks which he has so well earned by his skill and success in carrying out the construction of the Convalescent Machine.